

4. Overview: Weed data for Aboriginal lands in the NLC area

The use of the word Aboriginal Land in this document then is recognised as a non-Aboriginal construct but nevertheless data is presented from that viewpoint. To include weeds from Aboriginal land from an indigenous perspective, including land to which they do not have current legal title, would mean covering all of the lands within the NLC—both those lands to which Aboriginal people have recognised title and those lands where Aboriginal interests have effectively been supplanted by non-Aboriginal tenure.

There is very little quantitative evidence of unwanted exotic plant species on Aboriginal land⁵. The North Australian Quarantine Service (NAQS) has carried out some qualitative surveys within 20 km of the Northern Territory coastline. While these surveys focused on NAQS hit-list species they also recorded other useful data such as the weed species present and cultivated ornamental and crop plants. This data is extremely useful and makes up the bulk of the reliable weed data that exists on coastal Aboriginal land.

Herbarium records are a very useful set of data however it should be recognised that their main focus is on native plants rather than weeds. Unfortunately data from other sources is extremely poor. For example, a limited number of surveys on Aboriginal land carried out by NTDFIP have concentrated mainly on noxious weeds (those listed under The Northern Territory Noxious Weeds Act 1980) and therefore are of limited use in assessing the overall exotic plant status of an area.

In most areas weed data is fragmented and is documented poorly or not at all. Most sources of weed data, except the Darwin Herbarium (DNA) database, are not backed by voucher specimens and thus specimen data tends to be outdated and at times suspect in its determination. It is recommended that the NLC make sure any database development is based on International Transfer Formats so data exchange and regular database updates can be made between the DNA Herbarium and the NLC. Recorded in this survey, in some instances, was a deep sense of despair as Aboriginal people could see many problems with weeds on country that currently is not under their control, management or to which they do not have legal title. However, it is still considered to be their own country, from which they have been forcibly alienated.

The listing of exotic plant species presented below is not intended to be a complete list of known species on Aboriginal land as no appropriate survey work has been carried out. It is intended however to summarise the existing knowledge we have and highlight the gaps in our knowledge of the distribution of weeds. There is an urgent need to carry out a comprehensive survey for all weeds on all Aboriginal land.

4.1. Naturalised exotics in Australia and the Northern Territory

Since European settlement of Australia, exotic plant species have established in Australia at alarming rates. Csurhes and Edwards (1998) report this rate to be around 11 species per year. However, because of the relatively short history of European settlement, Australia is still comparatively weed free. In 1991 about 15% of the total vascular flora are naturalised alien plants (Humphries et. al. 1991). Current estimates are put at around 18% (Storrs and Lonsdale 1995). This is low in comparison to some other countries which have very high percentages of introduced plant species e.g. New Zealand 51%, Britain 32% and Hawaii 40% (see Table 2).

The Northern Territory has around 237 species listed as exotic plants. These include all categories of weeds outlined in Section 3.1, some of which are not necessarily naturalised exotics. This represents around 5.6 % of the flora which is the lowest percentage of any state or Territory in Australia (see Table 2). This is probably a result of limited agricultural

5. The terms *unwanted exotic plants* and *weeds* will be used interchangeably in this document.

Weed data for Aboriginal lands in the NLC area

development, low population densities (Humphries et. al. 1991), seasonal aridity (Usher 1988), and the low fertility of many northern Australian soils (Cowie & Werner 1993).

Table 2 Percentage of weed species in various places (adapted from Storrs 1996a)

Location	No. of Weed Species	% Weed in Flora	Source
AUSTRALIA	2200	15	Humphries et. al. 1991
Tasmania	700	31	Humphries et. al. 1991
ACT	532	28	Berry & Mulvaney 1995
South Australia	904	25	Kloot 1987
Victoria	825	24	Forbes et. al. 1984
New South Wales	980	16	Humphries et. al. 1991
Queensland	1226	13	Csurhes and Edwards 1998
Western Australia	1032	11	Keighery 1995
Northern Territory	237	5.6	Dunlop et. al. 1996
OTHER COUNTRIES			
New Zealand		51	Storrs and Lonsdale 1995
Britain		32	Storrs and Lonsdale 1995
Hawaii		40	Storrs and Lonsdale 1995
Australian conservation areas: average		21	Lonsdale 1992
Kakadu:		5.8	Cowie and Werner 1987
		5.3	Brennan 1996
Tiwi Islands	95	1.4	Fensham & Cowie 1998
Arafura Floodplain	46	4.3	NT Herbarium (DNA) data

Published figures for Aboriginal land are generally not available, however in Kakadu National Park the number of alien plant species has increased at the rate of 1.6 species per year since 1948, and is expected to continue as a result of increased tourism and development (Cowie & Werner 1993). Fensham & Cowie (1998) report that the Tiwi Islands are relatively weed-free with around 1.4% of the flora as naturalised exotics. Surveys of areas such as the Arafura Wetlands⁶ in North East Arnhem Land indicate 46 weed species (4.6%) of the flora.⁷ A significant number of these are disturbance exotics and the populations of these around the township of Ramingining and surrounding outstations is relatively high. Fensham & Cowie (1988) report that on the Tiwi islands the majority of the exotic flora comes from around settlements and that even temporary settlements that are only used for dry season campsites provide habitat for exotic species.

These figures indicate that some of the larger areas of Aboriginal land in the NLC region are some of the least weedy areas in the world. This significant attribute of Aboriginal land in the NLC region highlights the importance of doing everything possible to maintain this status. Nevertheless, there is the potential for this status to change rapidly if a more modern approaches to weed management are not adopted or if present threats (e.g. *Mimosa pigra*, mimosa) are unchecked.

6. Some portions of the Arafura Wetlands have been placed on an interim listing under the Ramsar Convention on Wetlands of International Importance (RAMSAR-1971).

7. This data has been compiled from Northern Territory Herbarium (DNA) records. The Arafura wet lands was considered to be an area of around 71,000 ha. in the following area 12 23'-12 47' S and 134 43'-135 18'E.

Weed data for Aboriginal lands in the NLC area

Throughout Australia, weeds are spreading faster than they can be controlled. For large tracts of relatively weed-free Aboriginal land, apart from the problems of controlling or eradicating existing weeds, there is the seemingly endless advance of major potential invaders from Queensland such as *Thunbergia grandiflora* (blue trumpet vine), *Cryptostegia grandiflora* (rubber vine) and *Chromolaena odorata* (siam weed). *Cryptostegia grandiflora* currently has invaded more than three million hectares of mostly riparian habitat in north Queensland (McFadyen & Harvey 1990). To date the Northern Territory has been relatively free of this pest plant. However it has been recorded from Rocklands Station in the Northern Territory despite attempts to keep a rubber vine free buffer zone between the Northern Territory and the extensive Queensland infestations.

Indications are that introductions of plants to Australia are likely to increase in frequency unless improved preventative measures are implemented (Macdonald et. al. 1989). It is therefore highly likely that Aboriginal land in the Northern Territory will be faced with more severe weed problems in the future unless effective management strategies are quickly developed and implemented.

4.2 Data sources, limitations and classifications

The weed data presented in Table 3 have been drawn from a wide range of sources. These include NAQS quarantine survey data, Northern Territory Herbarium (DNA & NT) records, NTDPIF field officers and records, NLC records and staff, a limited number of regional weeds strategies and reports and also from weed surveys carried out on an opportunistic basis within this project. Reports and publications used in the compilation of the table of weeds can be found listed in the references (pp. 150).

At the time of writing permission to access the Northern Territory NTDPIF weeds database had not been finalised. In the past protracted ongoing problems have been encountered with NTDPIF staff over the availability of the electronic transfer of this data to the NLC. Legal documents and correspondence relating to the transfer of this data have been prepared by NTDPIF and are included in Appendices 8 and 9.

Weeds were listed and then rated according to the potential impacts and threat to areas of high conservation value and agricultural importance. The rating categories used were:

1. Severe
2. High
3. Moderate threat
4. Little threat
5. No threat

These rankings are somewhat tentative given we do not know the invasive potential of most of the recorded exotic plants. Adair & Groves (1998) provide a critique for assessment of the impacts of environmental weeds and also list the research that has been carried out on the impacts of weeds on biodiversity. Only two species listed in their work are also on the list of weeds recorded here. This highlights the urgent need to assess the impacts of weed species on native vegetation in the Northern Territory.

Each plant species was given a priority according to a number of factors including the declaration category, current or potential impacts on the land use, ease of achieving control and how important the weed was to Aboriginal people consulted during this survey. For example, *Alternanthera pungens* (khaki weed) and *Tribulus* spp. (caltrop) were considered high priority weeds because in the majority of communities visited they were of concern to the landowners. This was primarily because of their nuisance value e.g. the prickles caused great discomfort and thongs had to be worn when walking around, they restricted camping sites and people were always complaining about them. Although eradication of these weeds is unlikely, the size and severity of current infestations around communities could be reduced greatly. These species have been listed as a Class B Noxious Weeds under the Northern Territory Noxious Weeds Act.

Weed data for Aboriginal lands in the NLC area

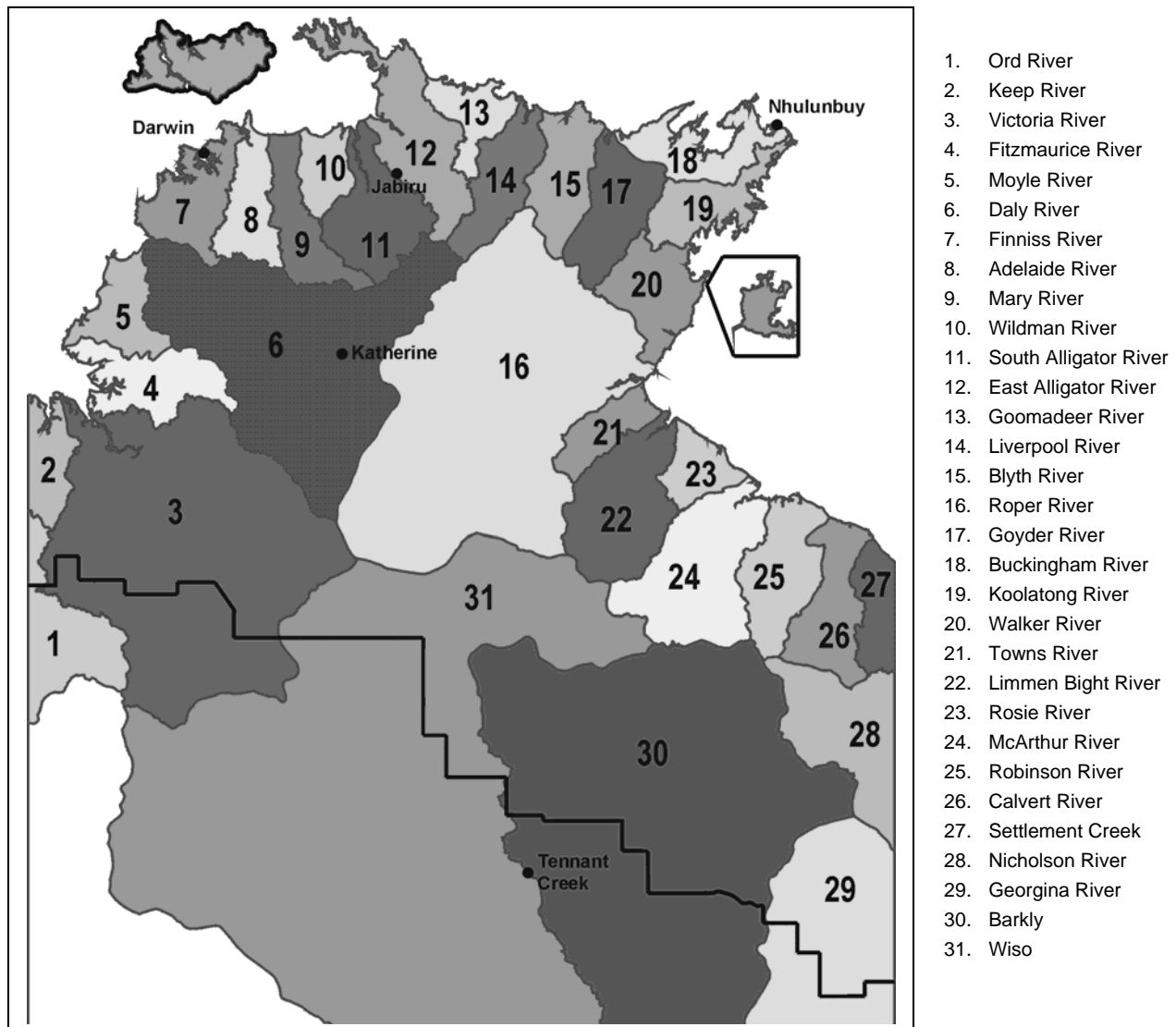
In other cases the potential impact of some species was enough to give them a high-priority ranking based on the behaviour of the species elsewhere in Australia or in other parts of the Northern Territory. *Ardisia humilis* was given such a ranking because it is listed in Cursches & Edwards (1998) as one of the major potential invasive weeds for Australia.

It also has a history of being a weed in other countries around the world and interstate; further, current populations in the Northern Territory are rapidly expanding. The potential of this species to dramatically alter the floristics of monsoon vine forest in the Northern Territory, particularly the wetter parts, was considered high. While prioritising weeds is an extremely difficult task, it needs to be done as current demand for weed control is already beyond available resources. Further work also needs to be carried out on criteria used to prioritise weeds and, in particular, how the criteria are applied.

The NLC should seek to work with other stakeholders in developing a standardised set of criteria and to periodically review the rankings set.

It is recommended that periodic reviews of these weed declaration categories will help determine if current management strategies and actions are adequate for resources available. The categories of priority listed are: high, medium and low. Dunlop et. al. (1996) was taken as the authority on nomenclature and exotic status. Weed distribution data was organised by catchment area. Figure 2 outlines the catchment areas of the Northern Territory on NLC Land.

Figure 2: Catchment areas



4.3 Weed origins

Most of the weeds recorded here have been introduced from other countries either intentionally or by accident. There has been a long history of plant introductions into Australia and indeed the Northern Territory. About half of Australia's noxious weeds were introduced intentionally, however some weeds have been introduced accidentally e.g. *Sida cordifolia* (flannel weed) and *Sida rhombifolia* (paddy's lucerne). In northern Australia most of the exotic plant introductions have come from other tropical countries. Of the weeds recorded on Aboriginal land in the NLC region 87 species were introduced accidentally (39% of all weeds), 67 species resulted from plants introduced as ornamental plants and then naturalising outside of gardens (30% of all weeds) e.g. *Delonix regia* (poinciana) and *Spathodea campanulata* (African tulip tree) and 69 species were introduced as pasture or crop species (31% of all weeds). Ironically the fate of introduced pasture species into the Northern Territory is much more likely to be a weed than a useful plant (Lonsdale 1994). Furthermore, some of the introduced pasture species have proved to be largely unpalatable to stock e.g. *Calopogonium mucunoides* (calopo) (Wesley-Smith 1992).

Recommendation 5: There currently needs to be greater effort put into the following areas on NLC land:

- assessment of potential weeds through an appropriate weeds risk assessment program by those intending to use plants as pasture species.
- level of awareness of the weed species that have been introduced.
- level of awareness of the method of introduction of these weeds.

4.4 Numbers and types of unwanted exotic plants on Aboriginal Land

A total of 225 unwanted exotic plant species have been recorded on Aboriginal Land in the NLC region (Table 3). These include 25 trees, 49 shrubs, 54 annual herbs, 18 perennial herbs, 29 vines or creepers, 28 perennial graminoids and 22 annual graminoids. The families with the highest representation include Poaceae (40 taxa), Fabaceae (27 taxa), Asteraceae (12 taxa), Euphorbiaceae (13 taxa), Amaranthaceae (9 taxa), Malvaceae (8 taxa), Convolvulaceae (8 taxa), Caesalpiniaceae (8 taxa), Mimosaceae (6 taxa), Solanaceae (6 taxa), Verbenaceae (6 taxa), Rubiaceae (6 taxa), Apocynaceae (6 taxa) and Cyperaceae (5 taxa).

A total of 81 species (36.0%) are naturalised exotics, 127 species (56.4%) are disturbance exotics and 17 species are (7.6%) are cultivated plants that have the potential to be weeds or have a demonstrated record as a weed elsewhere in Australia. This latter group is of considerable concern especially when considering the remoteness of the communities where they have been planted and the known behaviour of the species elsewhere in Australia within similar climatic zones. For example, *Ipomoea carnea* is known to have been planted as an ornamental shrub at various communities and homesteads in the Gulf region of the Northern Territory such as Borroloola, Ngukurr and the Nathan River Homestead. This species has naturalised in north Queensland (Queensland Herbarium 1994) and is also well established in Timor.

From the complete list of weeds and cultivated plants 52 species were given a high priority, 79 medium priority and 94 low priority ranking according to the criteria outlined in Section 4.2.

High priority group weeds are those weeds capable of causing significant impacts on current land use. Where possible these plants should be eradicated or actions be taken to prevent the spread or new outbreaks. Where these species are flowering or fruiting they should be removed by hand to prevent the outbreak of new individuals. Appropriate environmental management techniques should be applied and where possible biological control agents used.

Medium-priority group weeds are moderate to minor weeds that where practical should be controlled to prevent their spread and where numbers are low, eradicated completely. Appropriate environmental management techniques should be applied and where possible biological control agents used.

Weed data for Aboriginal lands in the NLC area

Low priority group weeds are minor weeds that generally have little known effect on current land uses. These weeds should, where practicable, be controlled to limit the spread. Environmental management techniques outlined in Section 5 will be important.

4.4.1 High Priority Weeds (52 species)

Of these high priority weeds 25 (48% of group) naturalised outside of gardens, 13 (25% of group) were introduced accidentally and 14 (27% of group) were introduced as pasture or crop species.

Acacia nilotica, *Acanthospermum hispidum*, *Alternanthera pungens*, *Andropogon gayanus*, *Antigonon leptopus*, *Ardisia humilis*, *Argemone ochroleuca*, *Azadirachta indica*, *Calopogonium mucunoides*, *Calotropis gigantea*, *Calotropis procera*, *Cenchrus ciliaris*, *Centrosema pubescens*, *Citrullus colocynthis*, *Clitoria ternatea*, *Crotalaria goreensis*, *Cryptostegia grandiflora*, *Cyperus involucratus*, *Delonix regia*, *Eichhornia crassipes*, *Gmelina arborea*, *Hymenachne amplexicaulis*, *Hyptis suaveolens*, *Ipomoea pes-tigridis*, *Ipomoea quamoclit*, *Jatropha gossypifolia*, *Leonotis nepetifolia*, *Leucaena leucocephala*, *Martynia annua*, *Mimosa pigra*, *Parkinsonia aculeata*, *Pennisetum pedicellatum*, *Pennisetum polystachion*, *Prosopis limensis*, *Ricinus communis*, *Salvinia molesta*, *Senna alata*, *Senna obtusifolia*, *Senna occidentalis*, *Sida acuta*, *Stachytarpheta australis*, *Stachytarpheta cayennensis*, *Stachytarpheta jamaicensis*, *Themeda quadrivalvis*, *Thunbergia grandiflora*, *Tribulus cistoides*, *Tribulus terrestris*, *Urochloa maxima*, *Urochloa mutica*, *Xanthium strumarium* and *Ziziphus mauritiana*.

4.4.2 Medium Priority Weeds (79 species)

Of these medium priority weeds 28 (35% of group) naturalised outside of gardens, 22 (28% of group) were introduced accidentally and 29 (37% of group) were introduced as pasture or crop species.

Allamanda cathartica, *Alternanthera dentata cv rubra*, *Alysicarpus ovalifolius*, *Andrographis paniculata*, *Annona reticulata*, *Aristolochia elegans*, *Arundo donax*, *Asystasia gangetica*, *Barleria prionitis*, *Carthamus lanatus*, *Caryota mitis*, *Cascabela thevetica*, *Cassia fistula*, *Catharanthus roseus*, *Cenchrus biflorus*, *Cenchrus echinatus*, *Cenchrus setigerus*, *Chloris gayana*, *Chloris inflata*, *Chloris virgata*, *Citrullus lanatus*, *Crotalaria pallida*, *Cryptostegia madagascariensis*, *Cynodon dactylon*, *Cynodon dactylon (Speedy Couch)*, *Cynodon radiatus*, *Cyperus rotundus*, *Dactyloctenium aegyptium*, *Dalbergia sissoo*, *Desmodium tortuosum*, *Echinochloa colona*, *Eleusine indica*, *Euphorbia cyathophora*, *Euphorbia heterophylla*, *Gomphrena celosioides*, *Gossypium hirsutum*, *Hibiscus sabdariffa*, *Hyptis capitata*, *Hyptis spicigera*, *Ipomoea carnea*, *Ipomoea triloba*, *Jatropha curcas*, *Khaya senegalensis*, *Lantana camara*, *Macroptilium atropurpureum*, *Macroptilium lathyroides*, *Malacra capitata*, *Melinis minutiflora*, *Melinis repens*, *Melia azadiracta*, *Merremia aegyptia*, *Merremia dissecta*, *Mimosa pudica*, *Mucuna puriens*, *Parthenium hysterophorus*, *Passiflora foetida*, *Phoenix dactylifera*, *Phyllanthus emblica*, *Quisqualis indica*, *Ruellia tuberosa*, *Senna siamea*, *Senna tora*, *Sesamum indicum*, *Sida cordifolia*, *Sida rhombifolia*, *Solanum nigrum*, *Solanum torvum*, *Spathodea campanulata*, *Spermacoce assurgens*, *Spermacoce hispida*, *Spermacoce latifolia*, *Stachytarpheta mutabilis*, *Stylosanthes guianensis*, *Stylosanthes hamata*, *Stylosanthes humilis*, *Stylosanthes scabra*, *Stylosanthes viscosa*, *Tectoma stans*, *Urochloa mosambicensis* and *Wedelia trilobata*.

4.4.3 Low Priority Weeds (94 species)

Of these low priority weeds 15 (16% of group) naturalised outside of the gardens, 51 (55.3% of group) were introduced accidentally and 28 (29.7% of group) were introduced as pasture or crop species.

Aerva javanica, *Aeschynomene americana*, *Aeschynomene villosa*, *Agave attenuata*, *Agave sisalana*, *Ageratum conyzoides*, *Alstonia scholaris*, *Amaranthus hybridus*, *Amaranthus spinosus*, *Amaranthus tricolor*, *Amaranthus viridis*, *Amaranthus* sp. (NMS-Nhulunbuy), *Ambrosia artemisiifolia*, *Anacardium occidentale*, *Axonopus affinus*, *Axonopus compressus*, *Bidens bipinnata*, *Bidens pilosa*, *Bothriochloa pertusa*, *Cajanus cajan*, *Capiscum annuum*, *Canavalia gladiata*, *Cenchrus brownii*, *Centrosema pascuorum*, *Chloris pilosa*, *Chloris pumilio*, *Citrullus lanatus* cv watermelon, *Conzya bonariensis*, *Corchorus olitorius*, *Corchorus trilocularis*, *Cyperus brevifolius*, *Cyperus compressus*, *Cyperus sphacelatus*, *Cucumis* sp. (RB-Nhulunbuy), *Desmanthus virgatus*, *Desmodium scorpiurus*, *Desmodium triflorum*, *Digitaria ciliaris*, *Digitaria violascens*, *Dioscorea alata*, *Echinochloa crus-galli*, *Eleutheranthera ruderalis*, *Emilia sonchifolia*, *Eragrostis pilosa*, *Euphorbia hirta*, *Euphorbia prostrata*, *Evolvulus nummularis*, *Fabaceae* sp. (NMS-Nitmuluk), *Grewia asiatica*, *Heliotropium indicum*, *Indigofera glandulosa*, *Indigofera hirsuta*, *Indigofera tinctoria*, *Ipomoea batatas*, *Jatropha multifida*, *Lycopersicon esculentum*, *Malvastrum americanum*, *Malvastrum coromandelianum*, *Mangifera indica*, *Manihot esculenta*, *Micrococca mercurialis*, *Mitracarpus hirtus*, *Momordica balsamina*, *Nerium oleander*, *Oldenlandia corymbosa*, *Opuntia stricta*, *Oryza sativa*, *Paspalum notatum*, *Passiflora suberosa*, *Phoenix sylvestris*, *Phyllanthus amarus*, *Pilea microphylla*, *Ravenala madagascariensis*, *Richardia scabra*, *Sansevieria trifasciata*, *Scoparia dulcis*, *Setaria italica*, *Setaria sphacelata*, *Solanum americanum*, *Solanum erianthum*, *Sorghum alnum*, *Sorghum bicolor*, *Sporobolus coromandelianus*, *Sporobolus jacquemonti*, *Sporobolus natalensis*, *Synedrella nodiflora*, *Tabernaemontana coronaria*, *Tamarix aphylla*, *Trianthema portulacastrum*, *Tridax procumbens*, *Triumfetta pentandra*, *Turnera ulmifolia*, and *Urochloa gilvrum*.

4.5 Distribution of exotic species

The distribution of naturalised exotic plant species in the Northern Territory is shown in Figure 3. Every point source locality for weeds in the Northern Territory Herbarium database was plotted to show total known weed distribution. The map shows that recorded weeds concentrate around major settlements and along major arterial roads⁸. This applies to both Aboriginal and non-Aboriginal land. This feature of weed distribution is related to the following:

1. Weeds spread commonly from settlement areas such as towns, communities and outstations where they are often garden escapees. In Nhulunbuy there are significant amount of weeds in the town lagoon that have come from the dumping of garden refuse.
2. Exotics establish in areas of greatest habitat disturbance. The development of road systems aids in the transport of weed species along their routes. In these situations weeds have been spread by heavy machinery, vehicles, livestock transportation, grading, slashing and hay carting. Some weeds species also are adapted to exploit 'gaps' in natural vegetation created by disturbance.

Figure 3 also shows that there are large areas of Aboriginal land that currently appear to be relatively weed free—e.g. large tracts of land in Arnhem Land and the upper Daly River/Port Keats Aboriginal Land Trusts. In both areas the spread of weeds may be somewhat reduced by the fact that access is by permit only and there consequently traffic is reduced along major roads servicing these areas.

8. It should be noted, however, that the NT Herbarium (DNA) database from which the map was produced comes from plant records collected that, in the main, come from areas easily accessed by botanists and other collectors, for example along roadsides. Thus the actual distributions can tend to be somewhat different on the ground.

Weed data for Aboriginal lands in the NLC area

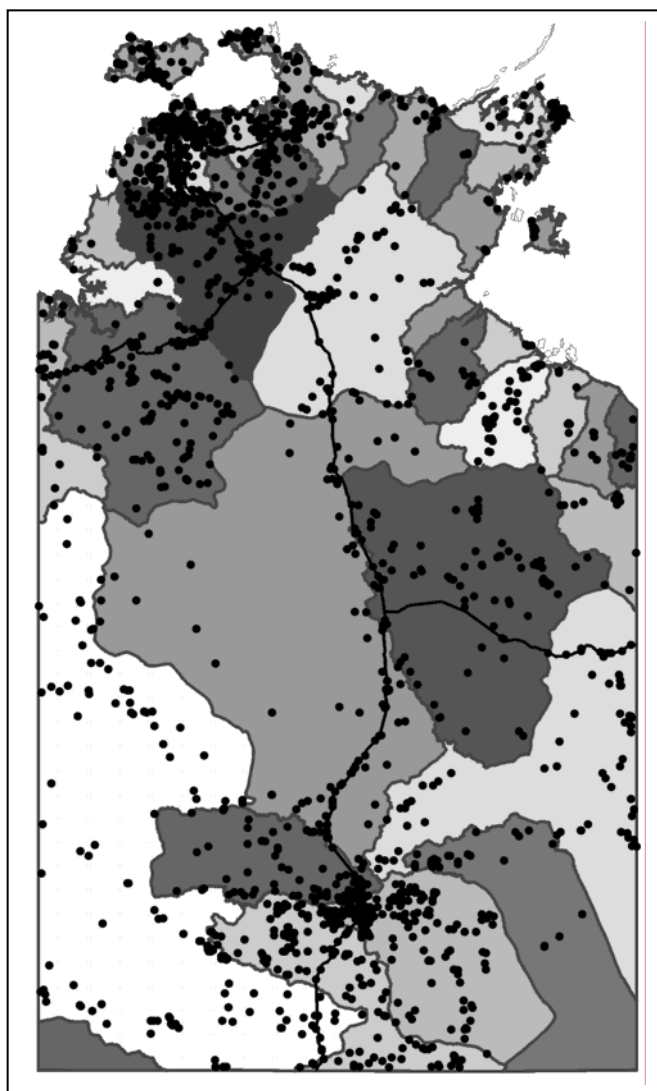


Figure 3
Distribution of naturalised exotics in the catchment areas in NT from Darwin Herbarium (DNA) records

Wiso (7 species), Calvert River (8 species), Fitzmaurice River (9 species), Rosie River (9 species) and Robinson River (11 species).

Numbers recorded in this table may reflect the status of our knowledge on weed distribution rather than indicating any real differences in weediness of different catchments. Those catchments with the lowest recorded weed species are indicators of our lack of knowledge about weed distribution from a large area of the Northern Territory. There is an urgent need to survey Aboriginal land for known and potential weed species to rectify this situation. It is interesting to note that catchments having the greatest number of weeds present are those transversed by major roads, those with major agricultural and pastoral activities and those containing major settlements with high levels of disturbance and vehicular traffic.

There is also an urgent need to collect accurate weed distribution data following standardised collecting techniques so that weeds on Aboriginal land can be accurately mapped. This baseline data is extremely important for the formation of sensible strategies and control techniques.

There are also less minor arterial roads making access to remote areas difficult thus limiting the spread of weeds. This is important when developing strategies for weed prevention. For example, placing vehicle washdown facilities at the entry points to these areas may help prevent the transport of weeds into relatively clean areas.

Figure 3 shows the distribution of weed species by catchment area in NLC land. Table 3 lists each species and the number of catchments recorded for each species. The catchments with the greatest number of weed species include Finnis River (133 species), Buckingham River (128 species), East Alligator River (100 species), South Alligator River (79 species), Daly River (75 species), Blyth River (66 species), Adelaide River (59 species), Liverpool River (58 species), Koolatong River (58 species), Goyder River (58 species) and McArthur River (52 species).

Those catchments with the lowest number of weed species recorded include Ord River (1 species), Georgina River (1 species), Towns River (2 species), Keep River (3 species), Barkly (3 species), Nicholson River (4 species), Settlement Creek (6 species),

Weed data for Aboriginal lands in the NLC area

Mapping methods should include the use of GPS and GIS technologies. NTDPIF weeds officers have offered help in the design and trialing of any technologies in this area and the NLC should seek their cooperation on this. See Section 4.7 for database development, mapping capabilities and collection proformas.

4.6 Weed species listings

Table 3 outlines the weeds present, their declaration category, their status, threat and priority as well as distribution data. The information for Table 3 is as follows.

Lifeform codes: **T**; Tree (woody, mature plants >5m tall), **S**; Shrub (woody; mature plants <5m tall); **V**; Vine (climbing plants with long stems); **PH**; Perennial Herb (long-lived, non-woody or semi-woody, non-climbing plants, not grasses or sedges); **AH**; Annual Herb (herb; annual or biennial, non-woody or semi-woody, non-climbing plants, not grasses or sedges); **PG**; Perennial Graminoid (long-lived herbaceous plants from the families Poaceae, Cyperaceae or Restionaceae); **AG**; Annual Graminoid (annual herbaceous plants from the families Poaceae, Cyperaceae or Restionaceae).

Noxious Weed Class or Category

Gazetted Noxious Weeds

- A Class A (to be eradicated).
- B Class B (growth and spread to be controlled).
- C Class C species (not to be introduced into NT, this includes all class A & B Noxious Weeds).

Note: Some species in Miller (1998) are referred to more than one class as indicated in Table 3.

Additional categories include:

- I Listed on Environment Australia's invasive weed list (see Csurhes and Edwards 1998).
- Q On quarantine targeted list by NAQS (see Waterhouse and Mitchell 1998).
- NL Species has not been classed or listed.

Weed Status

- NE: Naturalised exotic; naturalised in native plant ecosystems.
- DE Disturbance exotic; currently found in disturbed sites such as around buildings degraded roadsides, occasionally found outside of cultivation but not yet established as major weed.
- C: Cultivated; found in cultivation only but has known potential as a weed in other states/areas.
- I: Interstate; a known weed interstate not yet in NT but threat is present.

Area Threatened

1. Severe threat.
2. High threat.
3. Moderate threat.
4. Little threat.
5. No threat.

Catchment Numbers: For catchment details and numbers see Figure 2 in Section 4.2.

Table 3 Unwanted exotic plants on Aboriginal Land

Scientific name		Common name	Lifeform codes	Noxious Weed class or category	Weed status	Area threatened		Priority	Catchments recorded
						Natural	Pastoral		
<i>Acacia</i>	<i>Nilotica</i>	Prickly Acacia	T	A	NE	1	1	High	6,16,29.
<i>Acanthospermum</i>	<i>Hispidum</i>	Starburr, Goats Head	PH	B	NE	2	2	High	6,16,20,24,25.
<i>Aerva</i>	<i>Javanica</i>	Kapok Bush, Snow Bush	S	Not listed	NE	4	4	Low	1, 2, 3, 6, 12, 16, 22, 23, 24, 31.
<i>Aeschynomene</i>	<i>Americana</i>		S	Not listed	DE	4	4	Low	7,8.
<i>Aeschynomene</i>	<i>Villosa</i>		S	Not listed	DE	4	4	Low	7,8,6,11.
<i>Agave</i>	<i>Attenuata</i>		PH	Not listed	DE	4	4	Low	12,13.
<i>Agave</i>	<i>Sisalana</i>	Sisal	PH	Not listed	DE	4	4	Low	7
<i>Ageratum</i>	<i>Conyzoides</i>		AH	Not listed	DE	4	5	Low	7,12.
<i>Allamanda</i>	<i>Cathartica</i>	Yellow Trumpet Vine	V	Not Listed	DE/C	2	4	Medium	6,14,18 (mostly cultivated).
<i>Alstonia</i>	<i>Scholaris</i>	Cheesewood	T	Not listed	DE	4	5	Low	18.
<i>Alternanthera</i>	<i>Dentata cv rubra</i>	Metal Weed	PH	Not listed	NE	2	4	Medium	5,7,11,17,18,19.

Table 3 Unwanted exotic plants on Aboriginal Land

<i>Alternanthera</i>	<i>Pungens</i>	Khaki Weed	PH	B	NE	2	3	High	3,6,11,12,16,17,19,20,22,23,24,25,26,27.
<i>Alysicarpus</i>	<i>Ovalifolius</i>	Buffalo Clover	AH	Not listed	DE	3	5	Medium	5,7,8,9,11,12,13,15,17,18,19,20,24,31.
<i>Amaranthus</i>	<i>Hybridus</i>		AH	Not listed	DE	4	5	Low	20.
<i>Amaranthus</i>	<i>Spinosus</i>		AH	Not listed	DE	3	5	Low	18.
<i>Amaranthus</i>	<i>Tricolor</i>	Joseph's Coat	AH	Not listed	DE	4	5	Low	18,19.
<i>Amaranthus</i>	<i>Viridis</i>	Green Amaranth	AH	Not listed	DE	4	5	Low	3,7,16,18,19,20,24.
<i>Amaranthus</i>	<i>Sp.</i>		A	Not listed	DE	3	5	Low	18.
<i>Ambrosia</i>	<i>Artemisiifoli</i>							Low	
<i>Anacardium</i>	<i>Occidentale</i>	Cashew	T	I/not Listed	DE/C	4	5	Low	17,18. (mostly cultivated)
<i>Andrographis</i>	<i>Paniculata</i>		PH	Not Listed	DE	3	3	Medium	7,12,18
<i>Andropogon</i>	<i>Gayanus</i>	Gamba grass	PG	I	NE	1	3	High	6,7,8,9,10,11,14,19.
<i>Annona</i>	<i>Reticulata</i>		T	Not listed	DE	3	5	Medium	7,12.

Table 3 Unwanted exotic plants on Aboriginal Land

<i>Antigonon</i>	<i>Leptopus</i>	Coral Vine	V	I	DE	1	5	High	7,14,17,18.
<i>Ardisia</i>	<i>Humilis</i>		T/S	I	NE	1	5	High	7,18.
<i>Argemone</i>	<i>Ochroleuca</i>	Mexican Poppy	S	B	NE	1	1	High	24,26,27.
<i>Aristolochia</i>	<i>Elegans</i>	Dutchman's Pipe	V	I	C	3	4	Medium	24.
<i>Arundo</i>	<i>Donax</i>	Giant Reed, False Bamboo	PG	Not listed	DE	3	4	Medium	12,15,17,18.
<i>Asystasia</i>	<i>Gangetica</i>		S	Not listed	NE	3	4	Medium	7,12,15,17,20.
<i>Axonopus</i>	<i>Affinus</i>	Narrow-leaved grass Carpet	PG	Not listed	DE	4	5	Low	18.
<i>Axonopus</i>	<i>Compressus</i>	Shade Grass	PG	Not listed	DE	4	5	Low	11.
<i>Azadirachta</i>	<i>Indica</i>	Neem Tree	T	I	DE	2	4	High	3,7,6,14,20,26.
<i>Barleria</i>	<i>Prionitis</i>		S	A/I	NE	2	2	Medium	3.
<i>Bidens</i>	<i>Bipinnata</i>	Cobblers peg, Beggars Tick	AH	Not listed	NE	4	4	Low	6,11,12,18,24.

Table 3 Unwanted exotic plants on Aboriginal Land

<i>Bidens</i>	<i>Pilosa</i>	Pitch-forks, Burr marigold	AH	Not listed	NE	4	4	Low	6,7,8,10,11,12,13,18,20.
<i>Bothriochloa</i>	<i>Pertusa</i>	Indian Bluegrass	PG	Not listed	NE	4	5	Low	5,7,10,11,12,13,14,16,17,18,22.
<i>Cajanus</i>	<i>Cajan</i>	Guinea Pea	S	Not listed	C	4	5	Low	14,18. (mostly cultivated)
<i>Calopogonium</i>	<i>Mucunoides</i>	Calopo	V	I	NE	1	3	High	7,8,9,10,11,12,15,17.
<i>Calotropis</i>	<i>Gigantea</i>	Giant Rubber Bush	S	I	DE/C	1	1	High	15.
<i>Calotropis</i>	<i>Procera</i>	Rubber Bush, Rubber Tree, Calotrope, Kings Crown	S	B	NE	1	1	High	3,4,5,6,7,16,17,24.
<i>Canavalia</i>	<i>Gladiata</i>		V	Not listed	C	4	5	Low	6.
<i>Capsicum</i>	<i>Annuum</i>	Capsicum	AH	Not listed	DE	4	5	Low	12,18.
<i>Carthamus</i>	<i>Lanatus</i>							Medium	
<i>Caryota</i>	<i>Mitis</i>	Clumping Fishtail Palm	T	I	NE	3	5	Medium	7,18
<i>Cascabela</i> <i>(Thevetia)</i>	<i>Thevetica</i> <i>(peruviana)</i>	Yellow Oleander	S	I	NE	3	3	Medium	7,12,14,16,18,24.

Table 3 Unwanted exotic plants on Aboriginal Land

<i>Cassia</i>	<i>Fistula</i>	Golden Shower Tree	T	Not listed	NE	3	4	Medium	12,14,18,19.
<i>Cassia</i>	<i>Nodosa</i>			Not listed	DE	4	4	Low	18
<i>Catharanthus</i>	<i>Roseus</i>	Madagascar Periwinkle	PH	I	DE	3	4	Medium	7,12,14,16,17,18,19,20,22,24 (mostly cultivated)
<i>Cenchrus</i>	<i>Biflorus</i>	Gallons Curse	AG	Not listed	DE	3	3	Medium	3,24.
<i>Cenchrus</i>	<i>Brownii</i>	Possibly a native species?	AG	Not listed	DE	4	3	Low	6,7,12,15,17,18.
<i>Cenchrus</i>	<i>Ciliaris</i>	Buffel Grass	PG	Not listed	NE	1	4	High in natural areas	3,5,6,7,11,14,16,18,20,22,24,31.
<i>Cenchrus</i>	<i>Echinatus</i>	Mossman River Grass, Burr Grass	AG	B	NE	3	2	Medium	3,4,5,6,7,11,12,14,15,17,18,19,20,22,24.
<i>Cenchrus</i>	<i>Setigerus</i>	Birdwood Grass	AG	Not listed	NE	3	4	Medium	3,7,18.
<i>Centrosema</i>	<i>Pascurorum</i>		V	Not listed	DE	4	5	Low	8.
<i>Centrosema</i>	<i>Molle</i>	Centro	V	Not listed	NE	1	5	High	7,12,13,14,15,17,18.
<i>Chloris</i>	<i>Gayana</i>	Rhodes Grass	PG	Not listed	DE	3	5	Medium	8,11,18.

Table 3 Unwanted exotic plants on Aboriginal Land

<i>Chloris</i>	<i>Inflata</i>		PG	Not listed	NE	3	5	Medium	6,7,11,12,14,15,17,18,19,20,23.
<i>Chloris</i>	<i>Pilosa</i>		PG	Not listed	DE	4	5	Low	6,11.
<i>Chloris</i>	<i>Pumilio</i>		AG	Not listed	DE	4	5	Low	15,16,20.
<i>Chloris</i>	<i>Viragta</i>							Medium	
<i>Citrullus</i>	<i>Colocynthis</i>	Bitter Paddy Melon	V	Not listed	NE	2	3	High	3,24,27,31.
<i>Citrullus</i>	<i>Lanatus</i>	Paddy Melon, Pie Melon, Wild Melon, Camel Melon	V	Not listed	NE	3	4	Medium	12,18.
<i>Citrullus</i>	<i>Lanatus</i> cv <i>watermelon</i>	Water Melon	V	Not listed	DE	4	5	Low	6,15
<i>Clitoria</i>	<i>Ternatea</i>	Butterfly Pea, Blue Pea	V	Not listed	NE	1	5	High	5,7,8,12,13,14,16,17,18,20,22,24.
<i>Conyza</i>	<i>Bonariensis</i>	Flaxleaf/ Fleabone	AH	Not Listed		4	5	Low	24.
<i>Corchorus</i>	<i>Olorius</i>	Jute	PH	Not listed	DE	4	5	Low	3.
<i>Corchorus</i>	<i>Trilocularis</i>		PH	Not listed	DE	4	5	Low	3.
<i>Crotalaria</i>	<i>Goreensis</i>	Gambia Pea/Rattlepod	AH	Not listed	NE	2	2	High	6,7,8,9,11,12,14,15,17,18,19,20.

Table 3 Unwanted exotic plants on Aboriginal Land

<i>Crotalaria</i>	<i>Pallida</i>	Striped Rattlepod	AH	Not listed	NE	3	4	Medium	7,8,9,12,18,19.
<i>Cucumis</i>	<i>Sp.</i>		V	Not listed	DE	4	5	Low	18. (Nhulunbuy NAQS)
<i>Cryptostegia</i>	<i>Grandiflora</i>	Rubber Vine	V	C	I	1	1	High	28.
<i>Cryptostegia</i>	<i>Madagascariensis</i>	Ornamental Rubber Vine	V	I	NE	3	3	Medium	5,12,16,18,20
<i>Cynodon</i>	<i>Dactylon</i>	Couch	PG	Not listed	NE	2	5	Medium	3,5,6,7,8,9,10,11,12,17,18,20,22,24.
<i>Cynodon</i>	<i>Dactylon</i>	Speedy Couch	PG	Not listed	C	3	5	Medium	19.
<i>Cynodon</i>	<i>Radiatus</i>		PG	Not listed	DE	3	5	Medium	3,7,9,10,11,12,16,18.
<i>Cyperus</i>	<i>Brevifolius</i>	Mullumbimby Couch	PG	Not listed	DE	4	5	Low	7,8,11,12,18.
<i>Cyperus</i>	<i>Compressus</i>		AG	Not listed	DE	4	5	Low	6,7,8,11,12,15,16,18.
<i>Cyperus</i>	<i>Involucratus</i>	Windmill Sedge	PG	Not listed	NE	2	4	High	18,22.
<i>Cyperus</i>	<i>Rotundus</i>	Nut Grass	PG	Not listed	NE	3	4	Medium	7,11,12,13,15,17,18,19,24,26.
<i>Cyperus</i>	<i>Sphacelatus</i>		PG	Not listed	DE	4	4	Low	17,18.

Table 3 Unwanted exotic plants on Aboriginal Land

<i>Dactyloctenium</i>	<i>Aegyptium</i>	Button Grass	AG	Not listed	DE	3	4	Medium	4,6,7,9,11,12,13,14,15,17,18,19.
<i>Dalbergia</i>	<i>Sissoo</i>	Himalayan Raintree	T	A/B/I	DE	2	3	Medium	18,20.
<i>Delonix</i>	<i>Regia</i>	Poinciana, Red Flame Tree	T	I	NE	2	3	High	5,6,7,12,17,19.
<i>Desmanthus</i>	<i>Virgatus</i>	Dwarf Koa	S	Not listed	DE	4	5	Low	7,8,13,14.
<i>Desmodium</i>	<i>Scorpiurus</i>		PH	Not listed	DE	4	5	Low	18.
<i>Desmodium</i>	<i>Tortuosum</i>	Florida Beggarweed	AH	Not listed	NE	3	3	Medium	5,6,7,11,12,13,14,15,17,18,19,20.
<i>Desmodium</i>	<i>Triflorum</i>		AH	Not listed	DE	4	5	Low	5,7,11,15.
<i>Digitaria</i>	<i>Bicornis</i>		AG	Not listed	DE	4	5	Low	12,18.
<i>Digitaria</i>	<i>Ciliaris</i>	Summer Grass	PG	Not listed	DE	4	5	Low	7,8,9,10,11,14,15,17,18,19,20.
<i>Digitaria</i>	<i>Violascens</i>		AG	Not listed	DE	4	5	Low	7,10,11,12,18.
<i>Dioscorea</i>	<i>Alata/ ?bulbifera cv</i>		V	Not listed	DE/C	4	5	Low	18.

Table 3 Unwanted exotic plants on Aboriginal Land

<i>Echinochloa</i>	<i>Colona</i>	Awnless Barnyard Grass, Swamp grass	AG	Not listed	DE	3	5	Medium	3,4,5,6,7,8,9,10,11,12,14,15,16,17,18,22,24,30.
<i>Echinochloa</i>	<i>Crus-galli</i>	Barnyard Grass	AG	Not listed	DE	4	5	Low	5.
<i>Eichhornia</i>	<i>Crassipes</i>	Water Hyacinth	PH	A	NE	1	1	High	7 (Fogg Dam)
<i>Eleusine</i>	<i>Indica</i>	Crowsfoot Grass	PG	Not listed	DE	3	5	Medium	5,7,11,12,15,18,19,20.
<i>Eleutheranthera</i>	<i>Ruderalis</i>	Asteraceae(Syndrella nodiflora)	AH	Not listed	DE	4	5	Low	7,11,12,18,19,20.
<i>Emilia</i>	<i>Sonchifolia</i>		AH	Not listed	NE	4	5	Low	7,10,11,12,15,17,18,19.
<i>Eragrostis</i>	<i>Pilosa</i>		AG	Not listed	DE	4	5	Low	7,8,14,16,18.
<i>Eragrostis</i>	<i>Tenella</i>	Check status	AG	Not listed	DE	4	5	Low	5,7,10,14,15,16,22.
<i>Euphorbia</i>	<i>Cyathophora</i>	Dwarf Poinsettia	AH	Not listed	DE	3	4	Medium	7,18,24.
<i>Euphorbia</i>	<i>Heterophylla</i>	Painted Spurge/Milk Weed	AH	Not listed	NE	3	4	Medium	5,7,8,11,12,13,14,15,16,17,18,19,20,24.
<i>Euphorbia</i>	<i>Hirta</i>	Asthma Plant, Snake Weed	AH	Not listed	NE	4	4	Low	2,3,5,6,7,8,9,10,11,12,13,14,15,18,19,20,24.

Table 3 Unwanted exotic plants on Aboriginal Land

<i>Euphorbia</i>	<i>Prostrata</i>		AH	Not listed	DE	4	4	Low	30.
<i>Evolvulus</i>	<i>Nummularis</i>		PH	Not listed	DE	4	5	Low	7,8,11,12.
<i>Fabaceae sp.</i>		Nitmiluk NMS	AH	Not listed	DE	4	5	Low	6.
<i>Gmelina</i>	<i>Arborea</i>	Gmelina	T	Not listed	NE	2	3	High	3,5,7,14,15,16,17,18,19,22.
<i>Gomphrena</i>	<i>Celosioides</i>	Gomphrena Weed	PH	Not listed	NE	3	4	Medium	5,7,11,12,14,15,16,17,18,19,20,22,24.
<i>Gossypium</i>	<i>Hirsutum</i>	Cotton	S	Not listed	NE	3	4	Medium	6,7,11,12,14,15,16,18,22,24.
<i>Grewia</i>	<i>Asiatica</i>		S	I	NE	4	4	Low	6,7,8.
<i>Heliotropium</i>	<i>Indicum</i>	Blue Heliotrope	AH	Not listed	NE	4	5	Low	5,6,7,8,10,12,13,18.
<i>Hibiscus</i>	<i>Sabdariffa</i>	Rosella	S	Not listed	NE	2	3	High	3,6,7,11,12,14,15,17,18.
<i>Hymenachne</i>	<i>Amplexicaulis</i>	Olive Hymenachne	PG	Not listed	NE/I/C	1	2	High	7,8,9,19.
<i>Hyptis</i>	<i>Capitata</i>	Knobweed	AH	C	DE	2	2	Medium	12.
<i>Hyptis</i>	<i>Spicigera</i>		AH	Not listed	DE	3	3	Medium	19.

Table 3 Unwanted exotic plants on Aboriginal Land

<i>Hyptis</i>	<i>Suaveolens</i>	Hyptis/Horehound	AH	B	NE	1	1	High	4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,,28,31.
<i>Indigofera</i>	<i>Glandulosa</i>		AH	Not listed	DE	4	4	Low	12.
<i>Indigofera</i>	<i>Hirsuta</i>		AH	Not listed	DE	4	4	Low	6,7,8,12,14,15,16,18,20,24,26.
<i>Indigofera</i>	<i>Tinctoria</i>		AH	Not listed	DE	4	4	Low	7,8,10,12,14.
<i>Ipomoea</i>	<i>Batatas</i>	Sweet Potato	V	Not listed	C	4	5	Low	12,18.
<i>Ipomoea</i>	<i>Carnea</i>		V	Not listed	C	2	3	Medium	7,16,22,24. (mostly cultivated)
<i>Ipomoea</i>	<i>Pes-tigridis</i>		V	Not listed	NE	2	4	High	7,8,9,15,18.
<i>Ipomoea</i>	<i>Quamoclit</i>	Cupid's Flower	V	Not listed	NE	2	4	High	5,7,11,14,15,18.
<i>Ipomoea</i>	<i>Triloba</i>		V	Not listed	NE	3	4	Medium	6,7,8,9,11,12,15,18,19..
<i>Jatropha</i>	<i>Curcas</i>	Physic Nut	S	A	NE	2	1	Medium	10.
<i>Jatropha</i>	<i>Gossypifolia</i>	Bellyache Bush, Cotton-leaf Physic Nut	S	B	NE	1	1	High	3,5,6,7,12,16,18,19,24.
<i>Jatropha</i>	<i>Multifida</i>	Coral Flower	S	Not listed	C	4	5	Low	6,11,24. (mostly cultivated)

Table 3 Unwanted exotic plants on Aboriginal Land

<i>Khaya</i>	<i>Senegalensis</i>	African Mahogany	T	Not listed	DE	3	5	Medium	6,7,12,15,17,19,20,24.
<i>Lantana</i>	<i>Camara</i>	Common Lantana	S	B	DE	3	4	Medium	7,14,19.
<i>Leonotis</i>	<i>Nepetifolia</i>	Lion's Tail	AH	B	NE	2	2	High	6,7,22.
<i>Leucaena</i>	<i>Leucocephala</i>	Coffee Bush/ Leucaena	T	Not listed	NE	1	4	High in natural areas	5,6,7,8,12,14,15,18.
<i>Lycopersicon</i>	<i>Esculentum</i>	Tomato	AH	Not listed	DE	4	4	Low	6,18.
<i>Macroptilium</i>	<i>Atropurpureum</i>	Siratro	V	I	NE	2	5	Medium in natural areas	5,7,8,9,12,13,14,15,16,17,18,20,22.
<i>Macroptilium</i>	<i>Lathyroides</i>	Phasey Bean	V	Not listed	NE	3	5	Medium in natural areas	6,7,8,12,14,15,18,19,20.
<i>Malachra</i>	<i>Capitata</i>	? fasciata??	S	Not listed	NE	3	4	Medium	10,12.
<i>Malvastrum</i>	<i>Americanum</i>	Malvastrum	S	Not listed	NE	4	4	Low	3,7,13,15,16,18.
<i>Malvastrum</i>	<i>Coromandelianum</i>	Prickly Malvastrum	S	Not listed	NE	4	4	Low	3,7,17,16,18.
<i>Mangifera</i>	<i>Indica</i>	Mango	T	Not listed	DE	4	5	Low	7,12,20.

Table 3 Unwanted exotic plants on Aboriginal Land

<i>Manihot</i>	<i>Esculenta</i>	Cassava	S	Not Listed	DE/C	4	5	Low	15,18,24.
<i>Martynia</i>	<i>Annua</i>	Devil's Claw	S	A	NE	2	1	High	3,6,16.
<i>Melia</i>	<i>Azediracht</i>	White cedar	T	Not Listed	NE	3	5	Medium	6,7,12,14,18. (as a weed)
<i>Melinis</i>	<i>Minutiflora</i>	Molasses Grass	PG	Not listed	C	3	5	Medium	7,18.
<i>Melinis</i>	<i>Repens</i>	Red Natal Grass	AG	Not listed	DE	3	5	Medium	5,6,7,8,11,12,13,14,18,19,20.
<i>Merremia</i>	<i>Aegyptia</i>		V	Not listed	DE	3	3	Medium	7,11,12,15,18,19,24.
<i>Merremia</i>	<i>Dissecta</i>	White Convolvulus Creeper	V	Not listed	DE	3	3	Medium	3,6,7,12,14,15,18,24.
<i>Micrococca</i>	<i>Mercurialis</i>		AH	Not listed	DE	4	5	Low	7
<i>Mimosa</i>	<i>Pigra</i>	Mimosa, Giant Sensitive Plant	T	A/B	NE	1	1	High	5,6,7,8,9,10,11,12,14,16,17.
<i>Mimosa</i>	<i>Pudica</i>	Mimosa						Medium	
<i>Mitracarpus</i>	<i>Hirtus</i>	Berrimah Weed	AH	Not listed	DE	4	4	Low	6,7,11,12,14,15,18,19.
<i>Momordica</i>	<i>Balsamina</i>	Balsam Apple	V	Not listed	DE	4	5	Low	3,24,25.

Table 3 Unwanted exotic plants on Aboriginal Land

<i>Mucuna</i>	<i>Puriens</i>	Velvet Bean/ Cow Itch	V	Q/I	C	3	5	Medium in natural areas	17.
<i>Nerium</i>	<i>Oleander</i>	Oleander	T	I	DE/C	4	3	Low	12,15,24 (mostly cultivated)
<i>Oldenlandia</i>	<i>Corymbosa</i>	? Possibly a native, status as a weed to be checked	AH	Not listed	DE	4	5	Low	5,7,11,12,14,15,18,19.
<i>Opuntia</i>	<i>Sp.</i>	Prickly Pear	S	B	DE	4	5	Low	12
<i>Oryza</i>	<i>Sativa</i>	Rice	AG	Not listed	DE	4	5	Low	7,17.
<i>Parkinsonia</i>	<i>Aculeata</i>	Parkinsonia, Jerusalem Thorn	T	B	NE	1	1	High	3,6,16,22,23,24,25,26
<i>Parthenium</i>	<i>Hysterophorus</i>	Parthenium	AH	A	NE	3	2	Medium	16,27. (Controlled??)
<i>Paspalum</i>	<i>Notatum</i>	Bahia Grass	PG	Not Listed	DE	4	5	Low	5,7.
<i>Passiflora</i>	<i>Foetida</i>	Stinking Passion Flower	V	Not listed	NE	3	4	Medium	4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,25.
<i>Passiflora</i>	<i>Suberosa</i>	Corky Passion Flower	V	Not listed	DE	4	4	Low	7,8.
<i>Pennisetum</i>	<i>Pedicellatum</i>	Annual Mission Grass	AG	Not listed	NE	1	3	High	4,5,6,7,8,9,10,11,12,13,14,15,16,17, 18,19,20,24.

<i>Pennisetum</i>	<i>Polystachion</i>	Mission Grass	PG	B/I	NE	1	1	High	7,8,9,10,11,12,17,18.
<i>Phoenix</i>	<i>Dactylifera</i>	Date Palm	T	Not listed	DE	3	4	Medium	7
<i>Phoenix</i>	<i>Sylvestris</i>		T	Not listed	DE	4	5	Low	7
<i>Phyllanthus</i>	<i>Amarus</i>		AH	Not listed	DE	4	5	Low	5,6,7,8,9,11,12,14,15,18,19,20,24.
<i>Phyllanthus</i>	<i>Emblica</i>		T	I	DE	3	4	Medium	5,7.
<i>Pilea</i>	<i>Microphylla</i>		AH	Not Listed	DE	4	5	Low	18.
<i>Prosopis</i>	<i>Limensis (pallida)</i>	Mesquite	S	B/C/I	NE	2	1	High	6,28,30,31.
<i>Quisqualis</i>	<i>Indica</i>	Rangoon Creeper	V	Not listed	DE	3	3	Medium	7,11,15,16,18,24.
<i>Ravenala</i>	<i>Madagascariensis</i>	Travellers Palm	T	Not Listed	DE	4	5	Low	18
<i>Richardia</i>	<i>Scabra</i>		AH	Not listed	DE	4	5	Low	6,7,18.
<i>Ricinus</i>	<i>Communis</i>	Castor Oil Plant	S	B	NE	2	1	High	7,10,11,15.
<i>Ruellia</i>	<i>Tuberosa</i>	Ruellia	PH	Not listed	DE	3	4	Medium	7,8,11,18,19.
<i>Salvinia</i>	<i>Molesta</i>	Salvinia	PH	A/B	NE	1	2	High	6,7,11,12,18.

Table 3 Unwanted exotic plants on Aboriginal Land

<i>Sansevieria</i>	<i>Trifasciata</i>	Mother-in-law's-tongue	PH	I	DE	4	4	Low	7,15.
<i>Scoparia</i>	<i>Dulcis</i>		AH	Not listed	DE	4	5	Low	6,7,11,12,14,15,18,19,24.
<i>Senna</i>	<i>Alata</i>	Candle Bush	T/S	B/I	NE	1	2	High	7,11,12,13,16,17,18,19,24,25,27.
<i>Senna</i>	<i>Obtusifolia</i>	Sickle Pod	AH	B	NE	1	2	High	3,5,7,8,10,11,12,15,17,18,20,25.
<i>Senna</i>	<i>Occidentalis</i>	Coffee Senna	AH	B	NE	2	2	High	5,6,7,8,11,12,13,14,15,17,18,19,20.
<i>Senna</i>	<i>Siamea</i>		T	Not listed	DE	3	4	Medium	7.
<i>Senna</i>	<i>Tora</i>		AH	Not listed	NE	3	3	Medium	6.
<i>Sesamum</i>	<i>Indicum</i>	Sesame	AH	Not listed	DE	3	4	Medium	3,6,7,8,11,16.
<i>Setaria</i>	<i>Italica</i>							Low	
<i>Setaria</i>	<i>Sphacelata</i>	South African Pigeon Grass	AG	Not listed	DE	4	5	Low	18.
<i>Sida</i>	<i>Acuta</i>	Spiny-Head Sida	S	B	NE	2	2	High	2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,23,24,25.

Table 3 Unwanted exotic plants on Aboriginal Land

<i>Sida</i>	<i>Cordifolia</i>	Flannel Weed	S	B	NE	3	3	Medium	5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,22,24.
<i>Sida</i>	<i>Rhombifolia</i>	Paddy's Lucerne	S	B	NE	3	3	Medium	6,7,8,9,10,11,12,18,20.
<i>Solanum</i>	<i>Americanum</i>		S	Not listed	DE	4	4	Low	18.
<i>Solanum</i>	<i>Erianthum</i>	Potato Tree	S	Not listed	DE	4	4	Low	20.
<i>Solanum</i>	<i>Nigrum</i>	Black Nightshade, Black-Berry Nightshade	AH	Not listed	DE	3	3	Medium	7,11,18.
<i>Solanum</i>	<i>Torvum</i>	Devils Fig	S	Not listed	DE	3	3	Medium	18.
<i>Sorghum</i>	<i>Almum</i>		PG	Not listed	DE	4	5	Low	6,7,15,16.
<i>Sorghum</i>	<i>Bicolor</i>	Grain Sorghum, Forage Sorghum, Cultivated Sorghum	PG	Not listed	NE	4	5	Low	6,8.
<i>Spathodea</i>	<i>Campanulata</i>	African Tulip Tree	T	I	NE	3	4	Medium	12,16,18,19,24.
<i>Spermacoce</i>	<i>Assurgens</i>		AH	Q	DE	3	3	Medium	6,7,18.
<i>Spermacoce</i>	<i>Hispida</i>		AH	Not listed	DE	3	4	Medium	7.

Table 3 Unwanted exotic plants on Aboriginal Land

<i>Spermacoce</i>	<i>Latifolia</i>		AH	Not listed	DE	3	4	Medium	11.
<i>Sporobolus</i>	<i>Coromandelianus</i>		AH	Not listed	DE	4	5	Low	7.
<i>Sporobolus</i>	<i>Jacquemonti</i>							Low	
<i>Sporobolus</i>	<i>Natalensis</i>		AG	Not listed	DE	4	5	Low	5,7.
<i>Stachytarpheta</i>	<i>S.australis</i> <i>s.cayennensis</i> <i>s.jamaicensis</i>	Snake Weeds	S	B	NE	2	3	High	6,7,8,11,12,13,14,15,17,18,19,20,24.
<i>Stachytarpheta</i>	<i>Mutabilis</i>	Snake Weed	S	B	NE	3	3	Medium	19.
<i>Stylosanthes</i>	<i>Guianensis</i>	Stylo	S	Not listed	NE	3	5	Medium in natural areas	5,12.
<i>Stylosanthes</i>	<i>Hamata</i>	Verano Stylo, Verano, Stylo, Carribbean Stylo	S	Not listed	NE	3	5	Medium in natural areas	3,5,6,8,11,12,14,17,18,19,22.
<i>Stylosanthes</i>	<i>Humilis</i>	Townsville Stylo, Townsville Lucerne	S	Not listed	NE	3	5	Medium in natural areas	6,8,11,12,15,17,18,19,20.
<i>Stylosanthes</i>	<i>Scabra</i>		S	Not listed	NE	3	5	Medium in natural areas	3.

Table 3 Unwanted exotic plants on Aboriginal Land

<i>Stylosanthes</i>	<i>Viscosa</i>		S	Not listed	NE	3	5	Medium in natural areas	3,7,11.
<i>Synedrella</i>	<i>Nodiflora</i>	Cinderella Weed	AH	I	DE	4	5	Low	7,11,10,12,14,18.
<i>Tabernaemontana</i>	<i>Coronaria</i>		S	Not listed	C	4	5	Low	11.
<i>Tamarix</i>	<i>Aphylla</i>	Athol Pine	T	B/I	C	4	4	Low	20.
<i>Tecoma</i>	<i>Stans</i>	Yellow Balls	S	I	DE	4	4	Medium	5,18,22,24 (mostly cultivated).
<i>Themeda</i>	<i>Quadrivalvis</i>	Grader Grass	PG	B	NE	1	1	High	6,7,8,11,12,16,18.
<i>Thunbergia</i>	<i>Grandiflora</i>	Blue Trumpet Vine	V	I	C	2	3	High	5,6,7,16,18,24 (mostly cultivated).
<i>Trianthema</i>	<i>Portulacastrum</i>	Giant Pig Weed Black Pig Weed	A	Not listed	DE	4	4	Low	4,5,6,7,8,11,12,15,18,17.
<i>Tribulus</i>	<i>Cistoides</i>	Caltrop	AH	B	NE	3	3	High	3,4,5,6,7,8,9,10,11,12,13,14,15,17,18,19,20,21,22,23,,24,25,26,27.
<i>Tribulus</i>	<i>Terrestris</i>	Caltrop	AH	B	NE	3	3	High	3,5,6,16,18,26.
<i>Tridax</i>	<i>Procumbens</i>	Tridax Daisy	AH	Not listed	DE	4	4	Low	3,5,7,8,11,12,13,14,15,17,18,19,20,22,24.

Table 3 Unwanted exotic plants on Aboriginal Land

<i>Triumfetta</i>	<i>Pentandra</i>		AH	Not listed	DE	4	4	Low	11,12,13,15,16,18,20.
<i>Turnera</i>	<i>Ulmifolia</i>		PH	Not listed	DE	4	4	Low	18.
<i>Urochloa</i>	<i>Gilvum</i>		AG	Not listed	DE	4	5	Low	11.
<i>Urochloa</i>	<i>Maxima</i>	Guinea Grass	AG	Not listed	NE	1	5	High in natural areas	5,7,8,9,11,12,14,15,18.
<i>Urochloa</i>	<i>Mosambicensis</i>	Sabi Grass	PG	Not listed	DE	3	5	Medium	5,6,11,12,14,15,18,22,24.
<i>Urochloa</i>	<i>Mutica</i>	Para Grass	PG	Not listed	NE	1	5	High in natural areas	7,11,12,17,18,19,20.
<i>Wedelia</i>	<i>Trilobata</i>	Singapore Daisy	PH	I	NE	3	4	Medium in natural areas	7,18,19.
<i>Xanthium</i>	<i>Strumarium</i>	Noogoora Burr	S	B/C	NE	2	1	High	3,6,16,22,23,24,25,26,27,28,29,31.
<i>Ziziphus</i>	<i>Mauritiana</i>	Chinee Apple, Indian Jujube	T	A	NE	2	2	High	6,7,16,18,23,24.

Weed data for Aboriginal lands in the NLC area

4.7 Future collection, storage and mapping of weed data

It is important for land managers concerned with weed management that they have access to information in order to develop weed management strategies and so they can answer even the simplest of questions e.g. Where are weeds distributed? How many weeds are there? What species are present? Currently for Aboriginal land these questions are at best very difficult to answer with any confidence.

There is an urgent need to collect weed data about Aboriginal land and to store this on database systems that can be updated and will support weed-management strategies. Of particular relevance would be a mapping capability that can allow distribution maps to be printed. Minimum information to be collected and stored would include the origin of the weed, current range, abundance and rate of spread. Such information would allow the appropriate allocation of management resources to where they are most needed in terms of both species and locations.

Any database development will need to take into consideration the expertise of those already developing allied databases in northern Australia so that relevant data can be transferred between these database i.e. the NLC database can then be easily updated. The amount of work required to maintain standalone databases to a level useful to managers, particularly to cover the whole NLC area, is quite substantial. It is hard to see the NLC progressing far with current staffing levels, particularly within the Caring for the Country Unit where such a database would logically be maintained. It is recommended that funds be sought to provide a dedicated person for the collection, entry and maintenance of any database developed. Funding sources would logically come from ILC.

Databases already maintained with data relevant to the NLC area that could be transferred to the NLC include:

1. Parks and Wildlife Commission Herbarium specimen database and vegetation plot database. Microsoft Access based knowledge databases with useful plant (including weeds) data stored. Unofficial unconditional approval has been given for the NLC for access to all of this data.
2. NTDPIF weed management and mapping system.
3. Environment Australia-Kakadu Mimosa Database.
4. Pestinfo (DNR, QLD). NLC should approach Pest Information Systems Officer, Land Protection, Department of Natural Resources (DNR) in Qld (Brisbane) for access.
5. WA Herbarium specimen database (CALM).

4.7.1 Database development considerations

In order to best use human and other resources, all international transfer standards should be used, where possible, to allow data to be transferred from any recognised source. This will improve the reliability and extent of available data. Consideration should also be given to databases already developed for similar purposes elsewhere, both nationally and internationally. This may allow the easy use of recognised transfer formats and standardised fields of entry thus eliminating the problems of using poorly developed database with indecipherable personal coding schemes and data files structured in undocumented ways. It will also reduce the resources required to duplicate overlapping data management needs e.g. every weeds database in the world must accommodate synonymy of plant names. Consideration should also be given to the use of herbarium plant codes as a standard and directly selecting them from the herbarium database. Other land management agencies in the Northern Territory who collect vegetation data are moving towards using these codes. The NLC should liaise with the PWCNT Herbarium when designing its database so the incorporation of these codes can occur.

The value of any weeds database will depend upon the accuracy of the data collected. Proformas will need to be developed to assist field staff with standardised data collection. An example of a proforma developed and trialed as part of this project can be seen in Appendix 7. This proforma was distributed for trial in some communities and this should be followed up and comments on suitability collected. If proformas are hard to read or unnecessarily complex they will not be completed by field staff. The use of this proforma will need more trialing and modification. From initial reports some of the fields presented in the proforma were not perceived as relevant by some field collectors. There is obviously a need to train and explain to field collectors the importance of the proforma fields presented, particularly information relating to locations.

Weed data for Aboriginal lands in the NLC area

It would be highly desirable for the NLC to pilot a weed database collection and mapping program in one area or one community. This, once practically developed, can then be used as a model to train and instruct other communities.

Possible fields for database storage should include:

- Family
- Latin name; need to include names at subspecific levels such as subspecies varieties and cultivars as well as synonyms#
- Ethnoscience name; for example local Aboriginal botanical names and language group#
- Common name#
- Date of recording#
- Persons recording
- Location; physical location e.g. descriptive#
- Coordinates of the point or area occupied by the weed#
- Coordinate reference datum
- Description of location/habitat; e.g. the landform and habitat
- Plant notes; descriptive notes on the plant itself e.g. height, flower colour, smell, anecdotal notes on introduction, cultural notes
- Growth form; use standardised formats
- Phenology; e.g. flowering or seed
- Estimated area of infestation; measured in sq. m or ha
- Density; general indicators e.g. heavy dense medium
- Control methods used: e.g. record result of previous control measures such as change in area, rate of spread, density, percentage kill, any regeneration - natives, which species
- Weather conditions (if applicable)

Note: Minimum fields have been marked with #

4.7.2 Recommendations

Recommendation 6: NLC to seek funds to carry out a complete weed survey on all Aboriginal land. It is certain that the distribution data and the number of species recorded as weeds on Aboriginal land could be expanded greatly given further survey work.

Recommendation 7: NLC seek funds to provide a dedicated person for the collation, entry and maintenance of any database developed by the NLC This person should be located in the CFCU. Funding sources would logically come from ILC .

Recommendation 8: NLC seek funds to employ a weeds botanist to carry out the survey and data collection work on Aboriginal land. Possible funding sources include EA-invasive weeds program, or the ILC. This position should be a joint NLC and DPIF/Weeds CRC position.

Recommendation 9: NLC carry out an education program to increase the level of awareness in Aboriginal communities about weeds and their method of introduction.

Recommendation 10: NLC to continue liaison with NTDPFI re the development of its weeds database. The NLC should make sure it is involved any further developments by the EA working group for the development of the National Weeds Database.

Recommendation 11: NLC to pilot a weed database collection and mapping program in one area or one community. This, once practically developed, can then be used as a model to train and instruct other communities.

Recommendation 12: Attention to weed control on Aboriginal land should be given to species in the priority groups in descending order. Recommended control methods for weed species in the high and medium priority group are given in Appendix 3. It will be necessary to periodically review this list, add new species or change priorities should the need arise.